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Remarks

Claims 2-20, 22-28 and 30-33 are pending in the application and have been rejected under 35 USC § 103(a) over various combinations of references, including published Japanese application no. JP2000 056 399 of Nishikawa et al.

The applicants are at a loss to understand why the claims are rejected over a published Japanese application, which was provided as a Japanese language document with an English language machine translation of the Abstract, notwithstanding the existence of United States patent no. 6,456,359, which claims priority of the same Japanese patent application as published Japanese application no. JP2000 056 399. United States patent no. 6,456,359 issued in September 2002.

The claims are all rejected under 35 USC § 103(a). With reference to rejections under 35 USC § 103(a), MPEP § 2143 states: "To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)."

A. Claims 2-4, 6, 7, 9-20, and 30-32

The official action states: "Claims 2-4, 6, 7, 9-20, and 30-32 are rejected under 35 U.S.C. 102(b) as being unpatentable over Pan (6,181,846) in view of Nishikawa et al. JP2000056399..

The official action states that the above claims are rejected under 35 USC § 102(b) over the above combination of references. Since the claims are not

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rejected over a single reference, the applicant will assume that a rejection under 35 USC § 103(a) was intended.

Claim 2

The applicant respectfully submits that the rejection of claim 2 over Pan in view of Nishikawa et al. (*Nishikawa*) is improper for the following reasons: (a) the proposed combination of Pan and Nishikawa does not teach or suggest all the elements of claim 2, (b) the proposed combination of Pan and Nishikawa is improper because no proper motivation for making the combination is set forth in the official action, and (c) the proposed combination of Pan and Nishikawa is improper because the proposed combination changes the principles of operation of Pan's device.

(a) The official action admits that Pan does not disclose the polarization controlling reflector recited in claim 2 and alleges that Nishikawa discloses a polarization controlling reflector in Figures 1, 3, 4(a) and 4(b). The applicants respectfully disagree. The applicants respectfully submit that (i) Nishikawa does not disclose a polarization-controlling reflector as recited in claim 2, and (ii) Pan does not disclose an input polarization-dependent path splitting element that defines a branched input, as recited in claim 2.

(i) The official action does not indicate any particular portion of Nishikawa's apparatus as corresponding to the polarization-controlling reflector recited in claim 2. Accordingly, the applicant will assume that the Examiner regards Nishikawa's entire apparatus shown in Figures 1, 3, 4(a) and 4(b) as corresponding to the polarization-controlling reflector recited in the applicant's claim 2.

Claim 2 recites in part: "a polarization-controlling reflector, said reflector converting incident-light polarization components having incident angles of

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polarization into reflected-light polarization components having reflected angles of polarization, said reflector having a plurality of states, and being controllable such that said reflector can be changed from one of said plurality of states to another of said plurality of states, said reflected angles of polarization having an orientation relative to said incident angles of polarization, said orientation being a function of the state of the reflector”.

Nishikawa's photographic printer disclosed in Figures 1, 3, 4(a) and 4(b) uses a polarizing beam splitter 3 to transmit the P polarization component of the light generated by source 1 and color wheel 2. The polarizing beam splitter discards the orthogonal S polarization component. The P polarization component then passes through a quarter-wave plate 4 to digital micromirror device (DMD) 5. Depending on its state (ON or OFF), each pixel of DMD 5 either retroreflects the portion of the polarization component incident on it back to quarter-wave plate 4 or reflects the portion of the polarization component incident on it laterally with respect to the optical path. The quarter wave plate converts the retroreflected portions of the P polarization component to corresponding portions of an S polarization component. Polarizing beam splitter 3 reflects the S polarization component orthogonally to the direction of the P polarization component towards a printing lens 7 and photographic paper 6.

The applicants respectfully submit that the portion of claim 2 defining the polarization-controlling reflector does not read on Nishikawa's photographic printer. Nishikawa's printer has a single, fixed state in which simply selects one fixed polarization component of the light generated by the source and converts all of the polarization component reflected by the DMD to the fixed orthogonal polarization to cause it to be reflected by the polarizing beam splitter. Nishikawa's apparatus does not have a “plurality of states” and is not “controllable such that said reflector can be changed from one of said plurality of states to another of said plurality of states, said reflected angles of polarization having an orientation relative to said incident angles of polarization, said orientation being a function of

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the state of the reflector;". It should be noted that DMD does not change the polarization state of the polarization component it reflects.

(ii) The applicant further submits that Pan's device lacks an input polarization-dependent path splitting element that defines a branched input, as recited in claim 2 for the same reasons as those set forth in the Amendment filed on 7 January 2004 (the *prior Amendment*). The applicant respectfully submits that Nishikawa does not supply this missing element in the proposed combination of Pan and Nishikawa.

Accordingly, the applicant respectfully submits that the rejection of claim 2 is improper because the proposed combination of references does not teach or suggest all the elements recited in claim 2.

(b) The official action states:

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the invention of Pan such that it further comprise said polarization-controlling reflector explicitly taught by Nishikawa et al., for at least the purpose of controlling the polarization state of light traversing said optical device.

The applicants respectfully submits that the motivation for combining the references set forth in the official action does not meet the requirements for a establishing a proper *prima facie* case of obviousness set forth in MPEP § 2143. The official action does not indicate where the motivation set forth therein may be found in the cited references. The applicant has been unable to find anything in the cited references that teaches or suggests the motivation set forth in the official action. Moreover, the official action does not indicate where a reasonable expectation of success can be found in the cited references. The applicant has been unable to find anything in the cited reference that could properly be regarded as providing a motivation to combine the references or as providing a reasonable expectation of success.

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(c) "If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)" (MPEP § 2143.01)

The applicant respectfully submits that the proposed combination changes the principles of operation of Pan's optical switch. Pan clearly shows two orthogonal polarization components traversing his device – see Pan's Figures 3B and 3C in which the two polarization components are represented by solid and broken lines, respectively. Nishikawa explicitly teaches passing only one of the polarization components of the light generated by source 1 through polarizing beam splitter 3 in the first pass (col. 4, lines 5 and 6). The other polarization component is discarded. Combining Nishikawa's photographic printer with Pan's optical switch would change the principle of operation of Pan's optical switch because only one polarization component to pass through the combination. The fraction of incident light passing through the modified optical switch would depend on the polarization state of the incident light, whereas Pan's original optical switch is independent of the polarization state of the incident light.

Accordingly, the applicants respectfully submit that the rejection of claim 2 is improper and respectfully request that the rejection of claim 2 be withdrawn.

Claim 3

The applicant respectfully submits that the rejection of claim 3 is improper for the following reasons: (a) the proposed combination of references does not teach or suggest all the elements of claim 3, (b) the proposed combination of Pan and Nishikawa is improper for the reasons set forth above, and (c) the proposed combination of Pan and Nishikawa is improper because the proposed combination changes the principles of operation of Pan's optical switch, for the reasons set forth above.

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(a) The applicant respectfully submits that proposed combination of references does not teach or suggest all the elements of claim 3 because Pan does not disclose an output polarization-dependent path splitting element that defines a branched output, as recited in claim 3, for the reasons set forth in the prior Amendment. The applicant further submits that Nishikawa does not supply any of the elements missing from Pan's optical switch, for the reasons set forth above.

Claims 4 and 11

The applicant respectfully submits that the rejection of claims 4 and 11 is improper for the following reasons: (a) the proposed combination of references does not teach or suggest all the elements of claims 4 and 11, (b) the proposed combination of Pan and Nishikawa is improper for the reasons set forth above, and (c) the proposed combination of Pan and Nishikawa is improper because the proposed combination changes the principles of operation of Pan's optical switch, for the reasons set forth above.

(a) The applicant respectfully submits that the proposed combination of references does not teach or suggest all the elements of claims 4 and 11 because no location exists in the Pan's device where one of Pan's additional optical fibers could be located to receive both polarization components in the OFF state of Pan's device, as would be required for Claim 4 or Claim 11 to read on Pan's device modified as proposed in the official action. The applicant further submits that the proposed combination with Nishikawa does not supply any of the elements missing from Pan's optical switch for the reasons set forth above. See also the prior Amendment for further arguments regarding Pan's additional ports.

Claims 6, 7, 9 and 10

The applicant respectfully submits that the rejection of claims 6, 7, 9 and 10 is improper for the following reasons: (a) the proposed combination of references does not teach or suggest all the elements of claims 6 and 7 for the

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reasons set forth above with reference to claim 3 on which claims 6 and 7 depend and does not teach or suggest all the elements of claims 9 and 10 for the reasons set forth above with reference to claim 2 on which claims 9 and 10 depend, (b) the proposed combination of Pan and Nishikawa is improper for the reasons set forth above, and (c) the proposed combination of Pan and Nishikawa is improper because the proposed combination changes the principles of operation of Pan's optical switch, for the reasons set forth above.

Claims 12-22 and 32

The applicant respectfully submits that the rejection of claims 12-20 and 32 is improper because the official action does not establish a *prima facie* case of obviousness with respect to these claims. The official action does not attempt to indicate how the proposed combination of references teaches or suggests every element of claims 12-20 and 32. The official action does not indicate where in cited references may be found a teaching that would provide a motivation for the person of ordinary skill in the art to modify Pan's optical switch in the manner proposed in the official action. Nor does the official action indicate where in cited references may be found a teaching that would provide a reasonable expectation of success. Accordingly, the applicant respectfully submits that the rejection of claims 12-20 and 32 is improper and respectfully requests that the rejection be withdrawn.

Claims 28-31

The official action alleges that the structural teachings of Pan implicitly meet the method step limitations recited in these claims, citing Pan's Figs. 3B & 3C. The applicant respectfully submits that the official action establishes no proper *prima facie* case of inherence. To establish a *prima facie* case of inherency, the extrinsic evidence "must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so

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recognized by persons of ordinary skill.” *Continental Can Co. v. Monsanto Co.*, 948 F.2d 1264, 1268, 20 U.S.P.Q.2d 1746, 1749 (Fed. Cir. 1991). “Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.” *Id.* at 1269, 20 U.S.P.Q.2d at 1749 (quoting *In re Oelrich*, 666 F.2d 578, 581, 212 U.S.P.Q. 323, 326 (C.C.P.A. 1981). *In re Robertson*, 49 USPQ2d 1949, 1950-51 (CAFC, 1999). The assertion of inherency set forth in the official action does not meet this legal standard: no extrinsic evidence is set forth to indicate that the alleged inherent elements are “necessarily present in the thing described in the reference.”

The applicant further submits that the rejection of claims 28-31 is also improper because the proposed combination of references does not teach or suggest all the elements of claims 28-31, (b) the proposed combination of Pan and Nishikawa is improper for the reasons set forth above, and (c) the proposed combination of Pan and Nishikawa is improper because the proposed combination changes the principles of operation of Pan’s optical switch, for the reasons set forth above.

B. Claims 5, 8, and 33

Claims 5, 8, and 33 are rejected under 35 USC § 103(a) as being unpatentable over United States patent no. 5,973,831, allegedly of Pan, in view of Nishikawa and further in view of United States patent no 4,799,768 of Gahan.

The applicant respectfully points out that the official action shows the same incorrect patent number for Pan’s disclosure as the applicant pointed out in the prior Amendment. Moreover, the body of the rejection of claims 5, 8, and 33 is word-for-word identical to that set forth in the official action dated 8 October 2003 and that the applicant traversed in the prior Amendment. The official action does not indicate any relevance of Nishikawa’s disclosure in the rejection of claims 5, 8 and 33. The official action sets forth no proper motivation or expectation of

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success for making the proposed combination of Pan, Gahan and Nishikawa.

Accordingly, the applicant respectfully submits that the official action has not set forth a proper *prima facie* case of obviousness with respect to claims 5, 8 and 33 and that the rejection of claims 5, 8 and 33 is improper. Moreover, the applicant respectfully submits that the rejection of claim 5, 8 and 33 is improper for the reasons set forth in the prior Amendment. The applicant submits that Nishikawa does not supply any of the elements noted in the prior Amendment as being missing from the proposed combination of Pan and Gahan, for the reasons set forth above.

C. Claims 22-28

Claims 22-28 are rejected under 35 USC § 103(a) as being unpatentable over United States patent no. 5,930,422 of Cheng in view of United States patent no. 5,973,831 allegedly of Pan, and published Japanese patent application no. JP 2000 056 399 of Nishikawa. The applicant will assume that claims 22-28 are rejected over United States patent no. 5,930,422 of Cheng in view of United States patent no. 6,181,846 of Pan and published Japanese patent application no. JP 2000 056 399 of Nishikawa.

The applicant respectfully submits that the rejection of claim 22-28 is improper for the various reasons set forth in the prior Amendment with respect to these claims. The official action simply refers the reader to "above" with regard to the relevance of Nishikawa's disclosure in the rejection of claims 22-28. Otherwise, the rejection of claims 22-28 is word-for-word identical to that set forth in the official action dated 8 October 2003 and that the applicant traversed in the prior Amendment. The official action does not set forth a proper motivation for making the proposed combination of Pan, Cheng and Nishikawa. The applicant submits that Nishikawa does not supply any of the elements noted in the prior Amendment as being missing from the proposed combination of Pan and Chang, for the reasons set forth above.

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The applicant respectfully requests reconsideration of the rejected claims. The applicant believes that the application as now amended is in condition for allowance, and respectfully requests such favorable action. If any matters remain outstanding in the application, the Examiner is respectfully invited to telephone the applicant's attorney at (650) 485-3015 so that these matters may be resolved.

Respectfully submitted,

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